

PATENT COOPERATION TREATY

PCT/GB00/02850

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 22 March 2001 (22.03.01)	Applicant's or agent's file reference 102553/JE
International application No. PCT/GB00/02850	
International filing date (day/month/year) 24 July 2000 (24.07.00)	Priority date (day/month/year) 24 July 1999 (24.07.99)
Applicant HOLMES, Andrew, Bruce et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
13 February 2001 (13.02.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Olivia TEFY
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

Form PCT/IB/331 (July 1992)

GB0002850

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 102553/JE	FOR FURTHER ACTION		see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/GB 00/ 02850	International filing date (day/month/year) 24/07/2000	(Earliest) Priority Date (day/month/year) 24/07/1999	
Applicant CAMBRIDGE DISPLAY TECHNOLOGY LIMITED et al.			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.
☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ **Certain claims were found unsearchable** (See Box I).

3. ☒ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 00/02850

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 1 to 19, 20 to 22, 24, 25, 26, 28, 37, 38 and 39 to 45
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
29-33, 1-5 (part), 39-45 (part)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1 to 19, 20 to 22, 24, 25, 26, 28, 37, 38 and 39 to 45

Present claims 1 to 19, 20 to 22, 24, 25, 26, 28, 37 and 38 relate to an extremely large number of possible processes or compounds. In particular claim 1 does not define the type of aromatic or heteroaromatic group utilised, the type of metalation agent used, the agent used for the substitution and the type of polymerization which should be carried out. A meaningful search over the whole of the claimed scope is therefore impossible because claim 1 (resp. claim 20) relates to an extremely large number of possible processes (resp. products). The same applies for claims 2 to 19 (resp. claims 21, 22, 24, 25, 26, 28, 37 and 38) since the combination of features defined therein does not restrict enough the large number of possible processes (resp. products) in such a manner as to render a meaningful search possible. The same holds true for the subject-matter of claims 39 to 45.

Moreover, present claims 25, 26, 37 and 38 relate to the above defined polymers, wherein a desirable luminescent property and a band gap in the range 1.5 eV to 3.5 eV are defined. An attempt is made to define the polymers by reference to a result to be achieved, without defining the features of the polymers which are necessary in order to achieve said result. These claims therefore do meet the requirements of Art 6 PCT. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible.

Consequently, a search can be only carried out for those parts of the claims which appear to be supported by the description, namely those parts relating to polymers as defined in present claims 23, 27, 29 to 33 and 34 to 36, their method of synthesis as defined in present claim 9 and their use in optical devices (claims 39 to 45).

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 29-33, 1-5 (part), 39-45 (part)

Polymers as defined in claims 29 to 33, their method of synthesis as defined in present claims 1 to 5 and their use in optical devices (claims 39 to 45), i.e. parts relating to polyphenylenevinylene comprising two different silyl substituent groups X' and Y', where X' is ortho to a first linked position and Y' is ortho to the vinylene group.

2. Claims: 34-36, 1-5 (part), 39-45 (part)

Polymers as defined in claims 34 to 36, to their method of synthesis as defined in present claims 1 to 5 and their use in optical devices (claims 39 to 45), i.e. parts relating to polyphenylenevinylene comprising two identical silyl substituent groups namely a dimethyldecylsilyl substituent which are ortho to a first linked position and ortho to the vinylene group.

3. Claims: 27, 1-5 (part), 39-45 (part)

Polymers as defined in claim 27, to their method of synthesis as defined in present claims 1 to 5 and their use in optical devices (claims 39 to 45).

4. Claims: 23 (part), 1-5 (part), 39-45 (part)

Polymers as defined in claim 24 when referring to claim 23 (polymers wherein the first and second director groups are as defined in present claim 9 to 11 and which are not those defined in claim 27), to their method of synthesis as defined in present claims 1 to 5 and their use in optical devices (claims 39 to 45).

5. Claims: 23 (part), 1-5 (part), 39-45 (part)

Polymers as defined in claim 23 wherein X and Y are not as defined in present claims 9 to 11 (i.e. which are not those as defined in present claim 24), to their method of synthesis as defined in present claims 1 to 5 and their use in optical devices (claims 39 to 45).

INTERNATIONAL SEARCH REPORT

International Application No.

P 00/02850

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08G61/10 C08G61/02 C09K11/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08G C09K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 46652 A (CALIFORNIA INST OF TECHN) 22 October 1998 (1998-10-22) the whole document	1-5, 29-33, 39-45
Y	--- HWANG D -H ET AL: "ELECTROLUMINESCENT PROPERTIES OF NOVEL SILYL-DISUBSTITUTED SOLUBLE PPV DERIVATIVE" MOLECULAR CRYSTALS AND LIQUID CRYSTALS SCIENCE AND TECHNOLOGY. SECTION A. MOLECULAR CRYSTALS AND LIQUID CRYSTALS, GORDON AND BREACH PUBLISHERS, CH, CH, vol. 316, May 1998 (1998-05), pages 281-284, XP000941275 ISSN: 1058-725X the whole document --- -/--	1-5, 29-33, 39-45

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

6 November 2000

Date of mailing of the international search report

23 01 01

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Rousseau, F

INTERNATIONAL SEARCH REPORT

International Application No
/GB 00/02850

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>DATABASE WPI Section Ch, Week 199726 Derwent Publications Ltd., London, GB; Class A25, AN 1997-285197 XP002152054 & JP 09 104732 A (SAMSUNG ELECTRONICS CO LTD), 22 April 1997 (1997-04-22) abstract</p>	1-5, 29-33, 39-45
Y	<p>--- LIAN-HUI WANG ET AL.: "Synthesis, spectroscopy and electrochemistry study on a novel di-silyl substituted poly(p-phenylenevinylene)" SYNTHETIC METALS, vol. 105, 9 July 1999 (1999-07-09), pages 85-89, XP000942715 Scheme 1</p>	1-5, 29-33, 39-45
Y	<p>--- M.R. ANDERSSON ET AL.: "Photoluminescence and electroluminescence of films from soluble PPV-polymers" SYNTHETIC METALS, vol. 85, 1997, page 1275-1276 XP000942764 the whole document</p>	1-5, 29-33, 39-45
Y	<p>--- SNIIEKUS V: "COMBINED DIRECTED ORTHO METALATION-CROSS COUPLING STRATEGIES. DESIGN FOR NATURAL PRODUCT SYNTHESIS" PURE & APPLIED CHEMISTRY, PERGAMON PRESS, OXFORD, GB, vol. 66, no. 10/11, 1994, pages 2155-2158, XP000919008 ISSN: 0033-4545 cited in the application the whole document</p>	1-5
Y	<p>--- V. SNIIEKUS: "Directed Ortho Metalation. Tertiary Amide and O-Carbamate Directors in Synthetic Strategies for Polysubstituted Aromatics" CHEMICAL REVIEWS, vol. 90, no. 6, 1990, pages 879-933, XP002152053 Scheme 17, page 898</p>	1-5
Y	<p>--- J. F. BOWER: "Synthesis of 2-Substituted Dihydropyran 3-O-Carbamates via Combined Metalation-Suzuki-Miyaura Cross-Coupling Reactions" J. ORG. CHEM., vol. 63, no. 5, 1998, pages 1514-1518, XP000940872 cited in the application the whole document -----</p>	1-5

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 00/02850

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9846652	A	22-10-1998	AU 7251898 A	11-11-1998
JP 9104732	A	22-04-1997	NONE	